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preparation of a handy manual which presents it, provided, of course, that this same manual makes it possible for the great host of amateurs to determine their plants with satisfaction.

Concerning the other features of this *Manual* there can be no real discussion. The Engler and Prantl sequence is a matter of course, and is not under discussion as contrasted with that used in Gray's *Manual.* The use of the metric system is another well approved step which calls for no special comment, except that our manuals have been too slow in adopting it.

As to the work of the publishers, it deserves very high praise. Thin but tough paper, clear type, and narrow margins, so that a book of over 1000 pages can be carried in a good-sized pocket and can be bought for $2.25 is a triumph of the publisher's art and common sense.—J. M. C.

MINOR NOTICES.

A MONOGRAPH of the North American Sordariaceae has been published by David Griffiths.[2] After a general discussion of distribution, methods, development, and spore dissemination, the six genera are presented as follows: Sordaria (13 spp., 5 new), Pleurage (31 spp., 13 new), Hypocopra (9 spp., 3 new), Delitschia (9 spp., 5 new), Sporormia (15 spp., 7 new), and Sporormiella (1 sp.). Material from over 20 states was studied, and the period of development of many of the species determined.— J. M. C.

ARTHUR H. CHURCH has begun the publication of studies "On the relation of phyllotaxis to mechanical laws." The first part[3] now before us deals with construction by orthogonal trajectories. A general historical discussion of phyllotaxy is followed by a record of observations accompanied by handsome half-tone illustrations representing chiefly high orthostichies. This is followed by discussions of the geometrical representation of growth, the application of spiral-vortex construction, ideal angles, and asymmetry.—J. M. C.

THE FOURTH PART of Engler's *Pflanzenreich* has appeared, and contains the Monimiaceae (family 101 of the spermatophyte series) by Janet Perkins and Ernst Gilg. After the usual discussion of the important structural features of the family, and its geographic distribution, there follows the systematic presentation. Thirty-one genera are recognized, six of which have been established heretofore by Miss Perkins. The species are 253 in number, by far the largest genera being Siparuna (89 spp.) and Mollinedia (71 spp.).— J. M. C.

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[2] Mem. Torr. Bot. Club **11**: 1–134. *pls. 1–19.* 1901.

[3] CHURCH, A. H.: On the relation of phyllotaxis to mechanical laws. Part I. Construction of orthogonal trajectories. pp. 38. *figs. 34.* Oxford: Williams and Norgate. 1901. 3s. 6d.

"EXCURSION FLORAS" are useful in Europe, but no one has as yet included the whole of Europe. Franz Thonner[4] has just made the attempt, but is able to include only the genera of flowering plants. Characters are used so far as possible which do not demand the microscope for determination, and the keys have been constructed with a view to rapid and easy use. Not only are the genera of Europe included, but also those of Iceland, the Azores, the Urals, and the Caucasus. The work follows the families and their sequence as given in Engler and Prantl's *Die natürlichen Pflanzenfamilien*.—J. M. C.

DR. AUGUSTIN GATTINGER[5] has published a list of the vascular plants of Tennessee. This veteran botanist has long been active in the study of the very interesting flora of his state, and this volume forms a permanent record of his results. It includes 2218 species and follows the Engler and Prantl sequence. The title "Philosophy of botany" covers general papers under the titles "An epitome of the history and philosophy of botany," "The forest," "The introduction of a national forestry policy in the United States," and "Modern thoughts on the origin, evolution, and significance of life." Applications for copies should be sent to the author at Nashville, and should enclose ten cents for postage.—J. M. C.

THE TWELFTH ANNUAL REPORT (1901) of the Missouri Botanical Garden contains the following scientific papers: A disease of the black locust (*Robinia Pseudacacia* L.) with 3 plates, by HERMANN VON SCHRENK, being an account of the attacks of *Polyporus rimosus* Berk.; Crotons of the United States, with 28 plates, by A. M. FERGUSON, containing descriptions of 33 species and varieties, 6 of them being new; An undescribed Agave (*A. Treleasii*) from Arizona, with 3 plates, by J. W. TOUMEY; A cristate Pellaea, with 1 plate, by WILLIAM TRELEASE; A Pacific slope palmetto, with 3 plates, by WILLIAM TRELEASE, being a new species of Sabal (*S. Uresana*); Garden beans cultivated as esculents, with 10 plates, by H. C. IRISH, being a synoptical description (75 pp.) of the numerous culture forms.—J. M. C.

THE PROCEEDINGS of the Indiana Academy of Sciences for 1900 has just been distributed, and contains the following papers of botanical interest: A presentation of the possibilities of photomicrography, with twenty-two half-tone illustrations, by D. W. DENNIS; Cryptogamic collections made during the year, and Experiments with smut, by M. B. THOMAS; Flora of Lake Maxinkuckee, by J. T. SCOVELL; Generic nomenclature of cedar apples, by J. C. ARTHUR ; Additions to the flora of Indiana, and Some midsummer plants of southeastern Tennessee, by STANLEY COULTER ; A bacterial disease of tomatoes, by WILLIAM STUART ; Description of certain bacteria obtained from nodules of various leguminous plants, by SEVERANCE BURRAGE ; Mycological notes from Wells and Whitley counties, by E. B. WILLIAMSON.— J. M. C.

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[4] Excursionsflora von Europa. Anleitung zum Bestimmen der Gattungen der Europäischen Blütenpflanzen. 12mo. pp. x+356. Berlin: R. Friedländer and Sohn. 1901. *M.* 4.

[5] The flora of Tennessee and a philosophy of botany. 8vo. pp. 296. Published by the authority of the state through the Bureau of Agriculture. 1901.

NOTES FOR STUDENTS.

JOST[6] has published an interesting and valuable summary of the recent contributions to our knowledge of the synthesis of proteids. Recent workers generally agree, in contrast with the older view of Schimper, that proteid synthesis can take place in the dark and in tissues without chlorophyll, provided carbohydrates are at hand.— H. C. COWLES.

F. E. WEISS,[7] after examining a very large number of specimens of Lepidophloios and Lepidodendron, has concluded that the arrangement of the cells making up the phloem region, at least as seen in transverse section, not only does not preclude them from being of the nature of true phloem elements, but makes it very probable that the function of this tissue was that of a normal phloem.—J. M. C.

BENJAMIN D. GILBERT[8] has published a useful list of North American pteridophytes. According to the editor, the four objects in view were (1) to present a convenient alphabetical list ; (2) to make a list as comprehensive as possible in including all published forms ; (3) to have a complete list which uses a conservative nomenclature ; and (4) to publish the list of varieties of *Athyrium filix-foemina* which the author has found.—J. M. C.

J. W. HARSHBERGER[9] has been investigating the limits of variation in certain plants by the statistical method, largely as a contribution to the problem of species. Variations in size and shape of leaves, in weight and volume of fruit, and in number of seeds were tabulated. In *Liriodendron, Tulipifera, Sanguinaria Canadensis,* and *Ailanthus glandulosa* it was found that variation in size and form is due in part to the persistence of juvenile forms.— J. M. C.

THE GRASSES OF IOWA[10] is the title of a volume prepared by Professors

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[6] Biol. Cent. **20** : 625–637. 1900.

[7] On the phloem of Lepidophloios and Lepidodendron. Manchester Memoirs **45** : no. 7. *pls. 2–3.* 1901.

[8] Working list of North American pteridophytes (north of Mexico), together with descriptions of a number of varieties not heretofore published. Utica, N. Y.: Published for the Editor. 1901.

[9] The limits of variation in plants. Proc. Philad. Acad. **53** : 303–319. 1901.

[10] Iowa Geological Survey. Bulletin No. 1. pp. 525, with 220 illustrations. 1901.